

Remarks

Favorable reconsideration of this application is requested in view of the above amendments and in light of the following remarks and discussion.

Claims 1, 3-7, and 10-15 are pending; Claims 1 and 3 are amended, Claims 2, 8, and 9 are canceled without prejudice or disclaimer, and new Claims 10-15 are added, by way of the present response.

In the Office Action Claims 8 and 9 are rejected under 35 U.S.C. § 112, second paragraph; Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,621,700 to Wachtell; and Claims 2, 3, 8, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wachtell.

Initially, Applicants express thanks for the Examiner's indication that Claims 4-7 recite allowable subject matter, such that the claims although objected to would be allowable if rewritten in independent form. In response, new independent Claim 10 has been added, which recites features of original Claims 1 and 4. Further, new Claims 11-13 have been added, which depend from Claim 10. Thus, in accordance with the Examiner's indication of allowable subject matter, allowance of Claims 10-13 is requested.

As stated above Claims 8 and 9 are rejected under 35 U.S.C. § 112, second paragraph. The rejection is mooted by the cancellation of these claims.

As stated above Claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by to Wachtell, and Claims 2, 3, 8, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wachtell. The amendments to the claims overcome the rejections for the following reasons.

The present invention is directed to an apparatus for correcting deformation of a gas turbine blade. Independent Claim 1 recites a stationary die fixed to a backside of a tip shroud of a gas turbine blade to hold a back surface thereof when deformation of the tip shroud of a

gas turbine blade is corrected. A pressing die presses a front surface of the tip shroud so as to press the tip shroud of the blade between the pressing die and the stationary die. A supporting mechanism is used for supporting the stationary die with respect to the pressing die. A hydraulic drive mechanism is connected to the pressing die and includes a pressure generator for pressing the pressing die against the tip shroud held by the stationary die. A control device is operatively connected to the hydraulic drive mechanism and is adapted to set and indicate a driving condition on a basis of deformation correction data preliminarily stored in the control device. The surface of the stationary die contacting the tip shroud of the blade has a shape subtracting a return amount from a shape of the tip shroud after the correction of the deformation, and a surface of the pressing die contacting the tip shroud has a shape adding the return amount to the shape of the tip shroud after the correction of the deformation.

Wachtell is directed to straightening an airfoil section. The Office Action concedes that Wachtell does not teach or suggest the claimed features of a surface of a stationary die contacting a tip shroud of a blade having a shape subtracting a return amount from a shape of the tip shroud after correction of deformation, and a surface of a pressing die contacting the tip shroud having a shape adding the return amount to the shape of the tip shroud after the correction of the deformation, as recited in independent Claim 1.¹

The Office Action asserts, however, that “it is well known in the art to overbend material so as to impart a correct bend” and that therefore it would have been obvious to modify Wachtell. This assertion is traversed for the following reasons.

As shown in Figures 1-4, for example, of Wachtell, an airfoil section is clamped between upper and lower heated die blocks. This forged position is maintained under

¹ From page 3, line 17 to page 4, line 1, of the Office Action.

pressure for a suitable time until the airfoil section is reformed.² Generally, the forging temperature is maintained at about 1800 °F. The upper and lower dies are maintained at a temperature from about 1800 °F to 1600 °F, generally about 1700 °F.³ Thus, it is asserted that the apparatus of Wachtell, which applies pressure to the airfoil section with high temperature die blocks rather than using die blocks to overbend, is different from the claimed apparatus, which includes the stationary die having a shape subtracting a return amount and the pressing die having a shape adding the return amount.

As stated in MPEP § 2143.01, “[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves.” In this case, it is asserted that the Office Action has not provided any required teaching, suggestion, or motivation to modify Wachtell, which applies pressure to the airfoil section with high temperature die blocks rather than using die blocks to overbend, to include the claimed features of the stationary die having the shape subtracting the return amount and the pressing die having a shape adding the return and amount, as recited in independent Claim 1. Rather, it is asserted the only motivation for modifying Wachtell to include the claimed features of the stationary die having the shape subtracting the return amount and pressing die having the shape adding the return amount is provided by Applicants’ disclosure.

Further, MPEP 2143.01 requires that “[t]he proposed modification cannot render the prior art unsatisfactory for its intended purpose,” and further advise that “[i]f the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation for the proposed modification.” In this case, it is asserted that modifying Wachtell to include the claimed features of the

² Column 4, lines 7-13.

³ Column 5, lines 66-74.

stationary die having the shape subtracting the return amount and the pressing die having a shape adding the return amount renders Wachtell unsatisfactory for its intended purpose of applying pressure to the airfoil section with high temperature die blocks, without requiring that the die blocks have shapes for overbending the airfoil section.

For the reasons discussed in detail above, the allowance of independent Claim 1 is requested.

Notwithstanding the above discussion, which provides sufficient grounds for the allowance of independent Claim 1, it is asserted that the independent claim recites other features that are not disclosed or rendered obvious.

By way of specific non-limiting example, independent Claim 1 recites a pressing die pressing a tip shroud of a gas turbine blade so as to press the tip shroud between the pressing die and a stationary die. In contrast, it is asserted that Wachtell does not disclose or render obvious the claimed features of the gas turbine blade, but rather discloses the airfoil section, which is different in construction than the blade. Further, Wachtell also does not disclose or render obvious the claimed features of pressing a tip between dies, but rather shows that a body or main portion of the airfoil section is pressed between die blocks, and states that the buttresses, which are attached to the airfoil section, are oriented (straightened) after or subsequent to the straightening of the airfoil section.⁴ It is asserted that the foregoing provides alternate grounds for the allowance of independent Claim 1.

Claims 3-7 are allowable for the same reasons as independent Claim 1 from which they depend, as well as for their own features. Thus, allowance of dependent Claims 3-7 is requested.

⁴ Column 4, lines 41-48.

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New independent Claim 14, as well as Claim 15 depending therefrom, is allowable for reasons similar to those of independent Claim 1. Therefore, allowance of new Claims 14 and 15 is requested.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1, 3-7, and 10-15 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

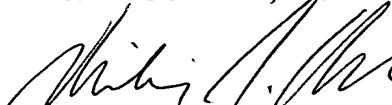
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